INVESTIGATION REPORT

Re: Frontier Chemical Waste Process, Inc.
Pendleton, Niagara County, NY

December 10, 1979

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## I. Background

Frontier Chemical Waste Process is a privately-owned liquid waste disposal facility. In the past, the site was used to neutralize metal-plating waste and for the storage of waste oil and chemical in drums. It is understood that only bulk lots of liquid waste from tanker trucks were neutralized. The drums were not opened and were only stored until reshipped. The waste oil was processed and reshipped.

The liquid waste after being neutralized was dumped into a 20-22 acre pond in an abandoned clay pit. Originally, the operation under a 1959 permit allowed the company to dump the supernatant and sludge into the lagoon with the excess liquid running off. In 1973, the discharge was stopped when the NYS Department of Environmental Conservation requested same.

Federal interest in the facility was generated as a result of the "Interagency Task Force's" investigation of hazardous waste sites in Erie and Niagara Counties.

At present the site is inactive, and for all practical purposes, abandoned. While there is electricity to the site, the buildings are all open and the area fenced. Two thousand (2000) tons of lime have been dumped on the site for future treatment of the pond.

## II. Nature of the Material Disposed at the Site

Any waste, except for a pile of earth scraped from the old drum storage area, is in the pond in the form of dissolved solids, low pH, and metal sludges. The pond is estimated to contain 100 to 150 m/g by Frontier.

## III. Description of Site

The area comprising the Frontier Chemical Waste Process, is located in Pendleton, NY and contains 80 acres. The waste pond, an abandoned clay pit, contains 22 acres of water with a maximum depth of 17 ft.

The lagoon is triangular in shape with the west side abutting Town Line Rd. (North/South) and the hypotenuse abutting private property along Beach Ridge Rd. (Northeast/Southwest). The east-west leg is in wetlands owned by Frontier as part of the 80 acres.

It is important to note at the time of the visits, Nov. 28, 1979 and the windshield survey of Nov. 26, 1979, that not only the Frontier site but much of the land surrounding it was moderately flooded or had pooled water on it. The land is relatively flat with poor surface drainage. To add to the problems, clay is common throughout the area and little perculation takes place. Bull Creek, just north of the pond (500-600 feet) was out of its banks and was causing some very minor flooding. Roadside ditches were also full. The excess water had come from recent rains. The U.S. Geological Survey, Tonawanda East

Quad (1965) shows many man-made ditches or canals in the area for drainage purposes.

## IV. Description of Surrounding Area

Private residences are located on the west along and across Town Line homes. The homes, three of them, about 100-200 feet away, face the pond. These homes have been built since Frontier Chemical Process, Inc. started business. Around the southend of the lagoon and along Beach Ridge Road, long established homes (estimated 35), and small businesses (estimated 4) are on both sides of the road. These homes are estimated to be from 200 to 1300 feet away.

An old, abandoned new York Central Railroad bed separates the Frontier property from the homes on Beach Ridge Road. The raised railroad bed separates the drainage areas, directing any spills or surface drainage from Frontier property and away from the Beach Ridge Road homes north to Bull Creek.

Beyond the homes mentioned, much of the area is farm and wetlands.

Drinking water comes from a public supply as fire hydrants are quite noticeable along Town Line Road and Beach Ridge Road. It is conceivable that some of the older homes may also have wells.

Bull Creek flows to the west across the north end of the site than south paralleling Town Line Road and discharges to Sawyer Creek. Bull Creek flows south about 2.5 miles before entering Sawyer Creek. Sawyer Creek also flows south for about three quarters of a mile before it enters Tonawanda Creek or the Barge Canal.

It should be noted when the canal is in use the flow is to the east at about 1300 cfs, towards the Genesee River. Along the way, the canal feeds a number of small streams emptying into Lake Ontario. When the canal is closed, the flow is to the south and west to the Niagara River. When the canal flows east, Niagara River water, Ellicott Creek water, and Tonawanda Creek water make up the major source of water.

## V. Geology and Ground Water

The soil around Frontier Chemical Waste Process, Inc. is clay. In the pond area, the clay is 35 feet deep. Information in the DEC files in Buffalo indicate that the first aquifer is about 70 feet down. From appearance of the site and due to the permeability of the soil, the water table for all practical purpose is at the surface.

VI. Sampling and Chemical Analysis of Samples

Several sets of samples have been taken over the years by DEC and the company or their representatives. The following results show an inconsistency in values and except for pH, the results shown should be taken to indicate the parameter exists. The values to be used in any future evaluation of the site should be done on a new set of samples. The results shown below are from the pond or its discharge:

| Parameter ug/l | Dates 6/8/79 | 10/29/75 | 3/14/75 | 12/19/74 | 11/20/74 | 4/2/73 |
|---|---|---|---|---|---|---|
| pH | 3.0 | 3/5 | 3.1 | -- | 4.5/5 | |
| phenols | 0.021 | 25/56 | --- | --- | 20 | |
| T.S.S. | 2 | --- | --- | --- | --- | |
| TDS | 3624 | --- | --- | --- | --- | |
| Cu | 9.3 | --- | 2.6 | --- | --- | |
| Cr | 2.1 | --- | 4.5 | --- | --- | |
| Fe | 60 | 120/130 | 130 | 1.4 | 63/65 | 17* |
| Cd | 0.93 | --- | --- | --- | --- | |
| Ni | 3.2 | --- | --- | --- | --- | |
| Zn | 1.3 | --- | --- | --- | --- | |
| Pb | 0.03 | --- | --- | --- | --- | |
| $NH_3$ | 30.2 | --- | --- | --- | --- | |
| Sulfates | --- | 450/2500 | --- | --- | 500/600 | |
| COD | --- | 4000/11500 | --- | 75 | 150 | |
| BOD | --- | 3000 | --- | --- | 600/800 | |
| Oil/ Grease | --- | 8/10 | --- | --- | 10 | |

* Bull Creek sample at same time Fe = 4 mg/l

While there are no chemical results from samples taken in the 70's, the company in 1970 did process (Stills) Acetone and Trichlorethylene. This was a recycling process in which the rejuvenated material was placed back in the market and the sludge went to a sanitary landfill.

VII. Status of Local-State Involvement

Local The Town of Pendleton

8/30/73 Recommended to the state DEC the lagoon not be approved and it be filled in.

10/2/73 Questioned the legality of any permits Frontier had.

8/10/78 Petitions to the town by local people to have site cleaned up.

9/25/78 Pendleton voiced its concern to DEC on operation of the facility.

5/2/79 See attached newsclip

5/7/79 Local man concerned about two smaller lagoons east of large lagoon in which he claims chemicals are buried. Ho growth noted above one of the units.

7/19/79 Complaint on dumping at night (April and July 1979) - odor problem - want area cleaned up by October 1979.

10/3/79 See newsclip - legal action for cleanup.

Niagara County Health Dept.

11/10/70 Requested monthly reports on conditions at facility.

5/28/76 Found no public health nuisance and no infringement on adjoining property.

3/20/78 State reports required and no discharge allowed.

8/17/79 George Amery, noted - no odor - no unauthorized dumping and that the gate was chained and locked.

NYS Dept. of Environmental Conservation

2/10/75 State requested an evaluation of site.

5/11/76 Site visit indicated no odor from lagoon but drums on property to be removed.

9/30/76 Noted 4000-5000 barrels in storage. Requested lagoon be lined until a pH of 5 was obtained.

NYS Dept. of Environmental Conservation (cont'd.)

3/8/77 No approval at this time for treatment and discharge.

7/29/77 Excessive Cu and Chrome in water need 20/1 if discharged. If lime is used to reduce the Cu and Chrome, the nickel concentration will be above limits but a 4/1 dilution factor would be satisfactory.

3/30/78 The state indicated in treatment, neutralization, would not be enough as the runoff would contain excess Cd, Chrome, Cu, Pb, Zn, Hi. The pH should be raised to 8.5. Sulfite compound to be added to neutralize metals. The bottom sludges should be checked for metals.

DEC set the following limits for waste discharge:

| | |
|---|---|
| BOD | 50/75 mg/l |
| TSS | 30/45 mg/l |
| Phenols | 1/2 mg/l |
| Fe | 0.5/1.0 mg/l |
| Cu | 0.1/0.5 mg/l |
| Cd | 0.1/0.2 mg/l |
| Hex Chrome | 0.05/0.1 mg/l |
| T. Chrome | 0.25/0.5 mg/l |
| Hi | 1.0/2.0 mg/l |
| Pb | 0.05/0.1 mg/l |
| Zn | 0.05/1.0 mg/l |
| Dissolved Solids | 2000/3000 mg/l |

6/26/78 Requesting Frontier to batch treat waste by 11/1/79; discharge by 3/1/80; closure within six months of lagoon drainage.

6/29/78 No drums on site - company providing cover.

3/16/79 State reviewing permit to discharge.

4/16/79 A wetlands inspection made by state indicated birds flushed from area dikes in poor condition - muskrat holes noted in the dikes.

NYS Dept. of Environmental Conservation (cont'd)

8/9/79 DEC requested Frontier to provide information on an analysis of soil samples for heavy metals. Barrels of waste buried on site. Obtaining a SPDES permit to discharge.

Frontier Chemical Waste Process, Inc. is working closely with the NYS DEC to come up with an agreeable process that would allow the water to be treated and discharged to Bull Creek within agreeable limits.

The company has hired a consultant and the details are presently being worked out. The flow in Bull Creek may be the major stumbling block. Restricted flow may not allow the lagoon to be drained, the sludge neutralized for a good number of years.

The company has agreed to a clean-up program regarding the site. However if very restrictive discharge limits are going to be placed on flow to Bull Creek, then the cleanup will not be completed in a good number of years.

No known law suits are pending against Frontier.

## VIII. Discussion

It has been claimed that an employee was found dead on the premises during the height of their acid neutralization program. He was alone and it is suspected he mixed acid with a cyanide solution or compound. No other or recent incidents have caused, according to Mr. Schults, any deaths or injuries.

Present conditions at the site might be called "attractive nuisances", the open pond. the empty open buildings, the empty tanks, the spread lime and the mound of dirt. There is no known potential for fire, explosion or ground water contamination. There is always the potential of surface water contamination due to faulty dikes, muskrat hole or vandalism.

It is the writer's contention that the NYS DEC be allowed to pursue the course they are taking in getting Frontier Chemical Waste Process, Inc. to treat the waste liquid and sludge and discharge same to Bull Creek. It is advisable, however, that the State and Frontier set a reasonable time table for this to be done. Bull Creek cannot hydraulically handle all the waste under all the conditions all year round. Serious consideration should be given to a pipe line to Tonawanda Creek.

Tonawanda Creek flows in two directions depending on its use as the Barge Canal. It then flows east filled by the Niagara River, Tonawanda Creek and Ellicott Creek water. When it flows to the Niagara River, then Tonawanda Creek becomes the main source of water. There is in the neighborhood of 800 mgd in the canal (flowing east) for dilution purposes. This would allow for treated waste about 1.5 mgd to be discharged to the canal far in excess of what could go into Bull Creek. This would take about 100 days and a temporary pipe line could be used.

The plan to treat the sludge and tie up the metals with sulfur compounds is good; however, if this sludge is to be trucked to a secure landfill, valuable and limited space would be taken up for perhaps more hazardous chemicals. Why not bury with a day cover in place.

Clay Borrow Pits on the same property could serve dual purposes, fill and cover material for the waste lagoon and sanctuary for the water fowl served by the designated wet lands.

In conclusion, this is a problem area, the pH of the lagoon is significant; however, it is not one that is threatening mankind. If the old building were removed along with the tanks, the site would become esthetically sound. If the pond were neutralized, the sludge stablized, covered with a blanket of clay and the dikes removed, the pond could become a viable asset to the community.